

#### ABSTRACT OF THE DISCLOSURE

The copper interconnect formed by the use of a damascene technique is improved in dielectric breakdown strength (reliability). During post-CMP cleaning, alkali cleaning, a deoxidizing process due to hydrogen annealing or the like, and acid cleaning are carried out in this order. After the post-CMP cleaning and before forming an insulation film for a cap film, hydrogen plasma and ammonia plasma processes are carried out on the semiconductor substrate. In this way, a copper-based buried interconnect is formed in an interlayer insulation film structured of an insulation material having a low dielectric constant.